

NEW GENERA AND SPECIES OF ELMIDAE (COLEOPTERA)  
FROM CALIFORNIA

HARRY P. CHANDLER

*California Department of Fish and Game, Red Bluff, California*

The following new genera and species are described at this time, so that they may be included in the section on the Elmidae in a book on the aquatic insects of California soon to be published by the University of California.

*Atractelmis* Chandler, new genus<sup>1</sup>

Form somewhat fusiform, length slightly more than twice width, nearly glabrous. *Head*: clypeus distinct, slightly depressed; antennae moderately long, 1½ times width of head, 11-segmented with last three segments perceptibly larger but not sharply differentiated; maxillary palpi (fig. 3) three-segmented. *Pronotum* with sides nearly straight, converging anteriorly, slightly convex at middle and flared basally; posterior margin not emarginate in front of scutellum; sublateral carinae slightly divergent anteriorly, with inner side deeply depressed basally, becoming gradually less distinct to anterior third where it disappears, connected at posterior fifth by a broad depression paralleling the posterior margin; discal area anterior to this depression evenly convex to anterior margin, with fine punctures; sides of pronotum lateral to carinae very deeply punctured or rugose. *Elytra* widest at anterior third; sides evenly elliptical to the rounded apices, except for slight angulation at posterior third; humeral angles prominent, concealing margin from above, area between them only slightly convex and continuous with depressed base of pronotum; elytra along medial line evenly curved about 90° from scutellum to apex, a little more strongly curved near scutellum; epipleura strongly narrowed from base, narrowly tapered to fine point near base of 5th abdominal sternite. *Ventral surface* with hydrofuge pile on underside of head, hypomera, epipleura, sides of thorax, abdomen, coxae and femur. Prosternum without short, broad anterior process under head.

Genotype: *Atractelmis wawona* Chandler, n. sp.

*Atractelmis wawona* Chandler, new species

*Adult*: In addition to the characters mentioned above this species may be characterized as follows: Length 2 mm., width .9 mm.; shining black above with four red spots on elytra. *Antennae* testaceous to rufous at apex. *Elytra* with humeral red spot nearly reaching first stria; sutural black area widened near scutellum; subapical red spot 3 to 4 times as long as wide, parallel to side of elytron, beginning on 5th stria and ending on 2nd; elytral striae narrowly impressed medially, more broadly so laterally; punctures small medially, separated by more than their own width, to coarse laterally,

<sup>1</sup> Generic name derived from *atraktos* meaning spindle, referring to its fusiform shape; and *Elmis* which indicated its relationships to the other genera having elongate sublateral carinae and three segmented maxillary palpi.

separated by less than own width. *Wings*: See fig. 1. *Venter* piceous, medial portion between coxae from anterior margin of prosternum to apex of 5th abdominal segment, without tomentum, finely punctate with short, depressed hairs from each puncture. Prosternum with posterior process margined nearly to anterior margin, sides convergent posteriorly at about a 60° angle, roundly truncate at apex, depressed medially behind coxae, middle coxae nearly twice (11:6) as widely separated as hind coxae. Metasternum and first abdominal sternite marginate laterally at beginning of hydrofuge pile. Last abdominal segment with apex broadly rounded. *Legs* piceous to rufous, anterior side of pro- and mesotibia and posterior side of meso- and metatibia with patches of tomentum, tibia and tarsus with numerous additional long hairs; tarsi with apex of last segment nearly as thick as tibia, claws very large and stout, thick at base, curved 90° from base to apex. *Genitalia*: See fig. 2.

*Holotype*, male, SOUTH FORK MERCED RIVER near WAWONA, YOSEMITE NATIONAL PARK, CALIFORNIA, elev. 4,000 feet, 17 July 1946 (H. P. Chandler); *paratype*, male, Middle Fork, Cottonwood Creek, Shasta County, California, 24 June 1952. The holotype will be placed in the California Academy of Sciences, San Francisco. The single paratype, which was dissected to study some of the structures, will be retained in the author's collection.

This species is amply distinct to be separated generically from any other species known to the author. As a genus, it is related to *Cleptelmis ornata* (Schaf.) and *C. addenda* (Fall) and *Ampumixis dispar* (Fall) which have the maxillary palpi three segmented, the epipleura tapering to a fine point posteriorly, and many other characters of shape and sculpture. From them it can be separated in the field by its spindle shape and the elongate posterior red spot. Under magnification it may be separated by the shape of the pronotum, especially the carinae not reaching the anterior margin, and the transverse basal depression between the carinae; and the epipleura strongly narrowed from base.

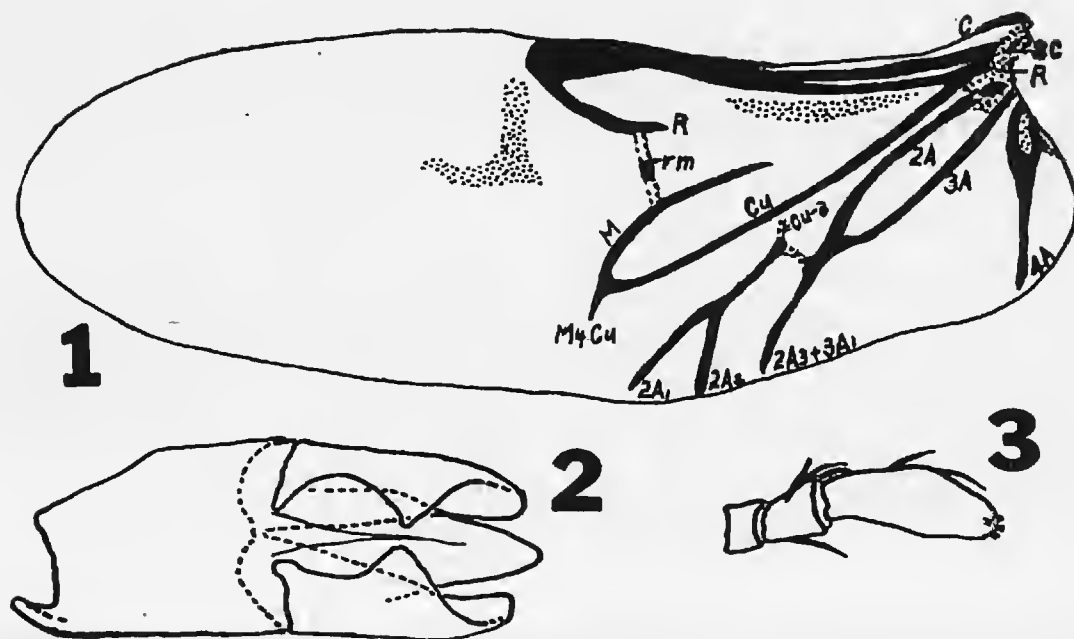
These two specimens were taken in riffle areas of a small and a medium sized clear mountain stream. The two localities are over two hundred miles apart, one in the Sierra Nevada mountains and the other in the Coast Range of Northern California. This would indicate that the species is widely distributed but quite rare, or that little collecting has been done in the exact niche it prefers.

#### *Rhizelmis*<sup>2</sup> Chandler, new genus

*Form* robust, about twice as long as wide, somewhat obovate, widest near posterior third, narrowed anteriorly to base of head, without conspicuous convexities, strongly narrowed posteriorly to blunt apices of the elytra with sides at about 70° angle, sparsely clothed with fine depressed hair above. *Head* as long as wide; clypeus distinct, slightly depressed; epicranial sutures

<sup>2</sup> Generic name derived from *rhiza* for root, referring to the roots and mosses which were processed in a Berlese funnel to obtain these specimens, and *Elmis*.

depressed; antennae moderately long, 1.3 times width of head, a little longer in male, eleven-segmented, with last three segments perceptibly larger but not sharply differentiated: maxillary palpi three-segmented. *Pronotum* with sides sinuate, converging anteriorly, slightly convex behind middle, slightly concave anteriorly, more strongly so posteriorly; hind angles flared; posterior margin not emarginate in front of scutellum; discal area evenly convex and finely punctured from anterior margin to posterior fifth, broken only by fine medial carina, bounded laterally by sublateral carinae; deep depression extending from anterior margin posteriorly along the lateral margin to posterior 2/5 with smaller depressions near the margin at posterior 1/5 and at posterior 1/5 of sublateral carinae; lateral fourth coarsely and densely punctured, with slightly depressed area along posterior margin also densely punctured except for two small tuberosities located medially to base of sublateral carinae; sublateral carinae nearly obscured by dense puncturing, carinae extending from posterior margin to base of domed discal area, then convexly around discal area nearly to anterior margin. *Elytra* widest near middle; sides more strongly rounded just behind middle, then somewhat flattened to the rounded apices; humeral angles only slightly prominent, area between them only slightly convex and continuous with depressed base of pronotum; elytra along medial line evenly curved about 90° from scutellum to apex, a little less strongly curved near apex; epipleura most strongly narrowed near the base of the metacoxa, narrowly tapered to a fine point just beyond base of 5th abdominal segment. *Venter* with hydrofuge pile on underside of head, hypomera, epipleura, sides of thorax, coxae and femora. Prosternum with a short, broad, anterior process under head.



Figs. 1-3. *Atractelmis wawona* Chandler, n.g., n.sp. 1. Wing. 2. Ventral view of male genitalia. 3. Maxillary palp.

Genotype: *Rhizelmis nigra* Chandler.

*Rhizelmis nigra* Chandler, new species

In addition to the characters mentioned above this species may be characterized as follows:

*Holotype male*: length 2.6 mm., width 1.3 mm.; shining black above. *Head* about as long as wide, densely covered with micropunctures and short, depressed hairs; antennae testaceous to brown at apex. *Elytra*, striae narrowly impressed, punctures small, separated by twice their own width, lateral striae and punctures a little stronger, punctures separated by more than their own width; strial intervals rugulose with scattered micropunctures. *Venter* piceous, medial portion between coxae from anterior margin of thorax to fifth abdominal segment without tomentum, but coarsely punctate and with short, depressed hairs, except metasternum which is finely punctate and nearly glabrous; prosternal process roughly triangular with bluntly rounded apex, about 1.2 times as long as wide, margins raised; mesocoxae 1.4 times as widely separated as hind coxae; metasternum with only short carinae behind mesocoxae at the edge of the tomentous area; fifth abdominal segment emarginate at apex. *Legs* rufotestaceous with thicker portions of femur piceous, all tibia have at least some tomentum on both the anterior and posterior sides. Tarsi and claws moderately enlarged. *Genitalia*, aedeagus evenly narrowed to dorso-ventrally keeled apex; parameres narrowed from basal to apical third then curved out and flared to obliquely truncate apex.

*Allotype female*: length 2.9 mm.; width 1.45 mm.; similar to type except antennae slightly shorter, and apex of fifth abdominal segment not emarginate. *Genitalia*, apical segment of the paired appendages three times as long as wide and about 1/3 as long as basal segment.

*Holotype*, male, PARADISE CREEK, COLUSA COUNTY, CALIFORNIA, 24 July 1953, elev. 2,400 feet (H. P. Chandler). *Allotype*, same data as holotype. Five *paratypes* same data as holotype. Holotype and allotype will be placed in the California Academy of Science collection, paratypes in Milton W. Sanderson's and my own collection.

The discovery of this species resulted from my attempts to collect and associate larvae with the adults of all the genera of Elmidae occurring in California. In the course of this work the larvae now associated with this species were collected from two widely separated localities. *Atractelmis* was the only known adult with which no larvae had been associated. With some misgiving the larvae were associated with *Atractelmis* since they were collected from similar habitats, and each had characters showing it to belong to the *Elmis* section of the family. The third attempt to collect adults at Paradise Creek was successful, and the correction was made.

In relation to the other genera with three-segmented maxillary palpi it is intermediate in size between *Narpus* which is larger, and *Cleptelmis*, *Ampumixis* and *Atractelmis* which are smaller. The sculpturing of the pronotum most closely approaches that of *Atractelmis*, but the general body shape is quite different. Also it may be separated from the latter by the projection of the prosternum under the head, the shape of the epipleura and the male genitalia with the flared tips of the parameres. The masking of the sublateral carinae of the pronotum by the lateral punctures will make this genus difficult to key out in a natural key unless the 3-segmented maxillary palpi, which are often difficult to count, are used near the beginning of the key.

*Larva*: Length 6.2 mm.; width, prothorax .75 mm., 1st abdominal segment .75 mm., 7th abdominal segment .65 mm.; long and slender with nearly parallel sides; hemicylindrical in cross section. Eighth and ninth segments narrowed to bluntly rounded, emarginate apex. Integument rufotestaceous with a fuscous tinge dorsally, especially on the tubercles; tubercles small, slightly raised, separated from each other by less than their own width except for several glabrous patches on thorax and apical half of ninth abdominal segment, each tubercle with a short, depressed posterior spine; hind margin of each segment fringed with an even row of closely spaced, elongate tubercles which appear to be bidentate posteriorly but have a short, semi-transparent spine in socket between teeth. *Head*: Antennae biramous; ocelli five, three closely placed anterior ocelli and two more widely separated posteriorly. *Prothorax* with lateral, longitudinal depression connected with transverse depression reaching nearly to medial line. *Venter*: Pleurae of promeso- and metathorax divided into anterior and posterior sclerites; anterior pleurae of prothorax separated medially by suture, sternum reduced to a small triangular sclerite between and anterior to coxae. Procoxal cavities open behind. Abdomen with pleurae on first to eighth segments. Ninth abdominal segment twice as long as wide, emargination at apex obtuse V-shaped, with a short projection at lateral angles; operculum  $4/9$  as long as segment.

*Records*: Paradise Creek, Colusa County, California, 21 Sept. 1952, 12 May and 24 July 1953, elev. 2,400 feet (H. P. Chandler); Deep Creek, Shasta County, 12 Oct. 1952, elev. 2,200 feet (H. P. Chandler). M. W. Sanderson noted in a letter that he had a larva similar to one of the above sent him, from Tagoose Creek, Inyo County, California, probably collected by Tarzwell.

This larva can be separated from those of other genera by its general shape and the presence of pleurae on the eighth abdominal segment. From *Narpus* which also has 8 abdominal pleurae, it can be separated by its less cylindrical shape and the absence of short, erect spines on the vertex.



The last collection from Paradise Creek consisted of 69 specimens ranging from small to mature larvae. These were sorted into 4 size groups as follows: (16) 2.7 to 3 by .35 mm.; (13) 3.3 to 3.9 by .45 mm.; (13) 4.5 to 5 by .6 mm.; (27) 5.5 to 6.3 by .8 mm. This may indicate that the life cycle extends over 4 or more years. There was also a pronounced color change between each group from light testaceous to the black tinged mature larvae.

*Optioservus canus* Chandler, new species

*Holotype male*: Length 2.1 mm.; width .9 mm.; head, thorax and scutellum black, elytra fuscous brown with testaceous humeral spots, venter fuscous brown; entire body more or less covered with conspicuous white, depressed hairs up to .1 mm. in length, giving grizzled appearance above and even apparent ventrally where body is covered with hydrofuge pubescence. *Head* black, alutaceous above; exposed mouthparts black, maxillary palpi four-segmented. Antennae testaceous, 11-segmented, length equal to width of head, basal two segments equal, distal segments 9-11 slightly flattened, greatest width equal to that of basal segments, intermediate segments 3-8 only  $\frac{2}{3}$  as wide. *Pronotum*: Length .8 mm.; width 1 mm.; sides parallel basally, arcuately convergent anteriorly, disk finely punctured, evenly convex, basal sublateral carinae slightly divergent anteriorly, extending  $\frac{1}{3}$  of distance to anterior margin; sides of pronotum lateral to carinae rugose, lateral margin caniculate above and strongly arcuately depressed anteriorly. *Elytra* slightly wider than prothorax, widest near middle, sides subparallel to apical third, intrastrial and interstitial intervals micropunctate, slightly rugose and convex except near middle of medial suture; strial punctures deep, separated by own width or less; humeral spot reaching third striae, not sharply defined, medial portion of elytron with poorly defined lighter brown area extending posteriorly nearly to apex. *Venter*: Thorax and abdomen including hypomera, epipleura and femur covered with hydrofuge pubescence, except medially between coxae from head to second abdominal segment. Hypomera broad, sides strongly convergent anteriorly; posterior prosternal process with sides converging posteriorly, narrowly rounded apically; last abdominal segment rounded from side to side. Legs fuscous brown with tarsi rufotestaceous, patch of tomentum on anterior side of pro- and posterior side of meso- and metatibia; tibia not constricted or bent near apex; last segment of tarsi not as thick as tibia, claws moderate, curved about  $90^\circ$  from base to apex.

*Allotype female*: Length 2.5 mm.; width 1.4 mm. Similar to male except antennae shorter, only  $\frac{4}{5}$  width of head. Elytra with humeral spot less distinct, interstitial intervals more uniformly convex.

*Holotype*, CHALONE CREEK, PINNACLES NATIONAL MONUMENT, SAN BENITO COUNTY, CALIFORNIA, elev. 1,000 feet, 3 May 1946 (H. P. Chandler). *Allotype* same data. *Paratypes*; 1 ♂ and 1 ♀ same data as type; 1 ♂? Santa Barbara and vicinity, California, (F. E. Winters); 1 ♀ Riverside, California (F. E. Winters). *Holotype* and *allotype* will be placed in California Academy of Sci-

ences; one paratype in the collection of M. W. Sanderson and the rest in the author's collection.

This species is probably most closely related to *O. divergens* (LeConte) from which it can be separated by having the hairs of the body half again as long and more conspicuous, giving a grizzled appearance; the elytra brown with a humeral spot, instead of solid black, and strial intervals more convex. In addition to some of the above characters, it may be distinguished from *O. quadrimaculatus* (Horn) by having smaller poorly defined humeral and (if present as in the paratype from Santa Barbara) subapical pale areas which are more yellow than red.

---

## ON SOME MALTHODES

(Coleoptera: Cantharidae)

KENNETH M. FENDER

*McMinnville, Oregon*

### MALTHODES COLUMBIENSIS Fender

Due to a typographical lapsus, ten paratypes were omitted from the original description of this species. These have been distributed as paratypes and as such should be considered. They were all collected by G. Stace Smith at Creston, B. C. on the following dates: May 5, 1947 (2), May 7, 1947 (1), May 14, 1948 (3), May 15, 1948 (1), May 21, 1948 (1) and May 25, 1948 (2).

### *Malthodes stacesmithi* Fender, new species

Black, mandibles and posterior margin of the pronotum narrowly obscurely paler, elytra beyond the basal fifth, tarsi and the apices of the tibiae piceous, male last dorsals, seventh ventral and median portion of the sixth ventral flavous, pubescence cinereous, inconspicuous, fine and sparse. Length 4 mm.

*Male.* Head wider than the pronotum, finely sparsely punctured behind the eyes which are large and prominent, antennae broken off beyond the eighth segment in the type, second and third segments equal, the fourth slightly longer, the intermediate segments about three times as long as wide; pronotum shining, transverse, the anterior angles obliquely rounded, the sides nearly straight and parallel to the hind angles which are rounded, disc very finely sparsely punctured, a small triangular impression medially at the base; elytra extending to the apex of the fifth ventral segment, sparsely punctured basally, becoming rugose apically, the apices not appreciably tumid.